# 1.0 PURPOSE AND NEED

## 1.1 Introduction

The *National Environmental Policy Act of 1969* (NEPA) requires Federal agency officials to consider the environmental consequences of their proposed actions before decisions are made. In complying with NEPA, the United States (U.S.) Department of Energy (DOE), National Nuclear Security Administration (NNSA)[2], follows the Council on Environmental Quality regulations (40 CFR 1500-1508) and DOE's NEPA implementing procedures (10 CFR 1021). The purpose of an environmental assessment (EA) is to provide Federal decision makers with sufficient evidence and analysis to determine whether to prepare an environmental impact statement (EIS) or issue a Finding of No Significant Impact.

Los Alamos National Laboratory (LANL) is a national security laboratory located at Los Alamos, New Mexico, that comprises about 40 square miles ($mi^2$) (103.6 square kilometers [$km^2$]) of buildings, structures, and forested land (Figure 1). It is administered by NNSA for the Federal government and is managed and operated under contract by the University of California (UC). The NNSA must make a decision whether to consolidate and construct new facilities for the Dynamic Experimentation Division (DX) to create a central core area of facilities, including offices, laboratories, and other support structures, at LANL's Two-Mile Mesa Complex, which comprises portions of Technical Area (TA) 6, TA-22, and TA-40. This Proposed Action would involve constructing new buildings; consolidating existing operations and offices; enhancing utilities, roads, and security infrastructure; and demolishing or removing older buildings, structures, and transportables at various technical areas used by DX (Figure 2). This EA has been prepared to assess the potential environmental consequences of this proposed construction, operational consolidation, and demolition project.

The objectives of this EA are to (1) describe the underlying purpose and need for NNSA action; (2) describe the Proposed Action and identify and describe any reasonable alternatives that satisfy the purpose and need for agency action; (3) describe baseline environmental conditions at LANL; (4) analyze the potential indirect, direct, and cumulative effects to the existing environment from implementation of the Proposed Action, and (5) compare the effects of the Proposed Action with the No Action Alternative and other reasonable alternatives. For the purposes of compliance with NEPA, reasonable alternatives are identified as being those that meet NNSA's purpose and need for action by virtue of timeliness, appropriate technology, and applicability to LANL. The EA process provides NNSA with environmental information that can be used in developing mitigative actions, if necessary, to minimize or avoid adverse effects to the quality of the human environment and natural ecosystems should NNSA decide to proceed with implementing the Proposed Action at LANL.

Ultimately, the goal of NEPA, and this EA, is to aid NNSA officials in making decisions based on an understanding of environmental consequences and in taking actions that protect, restore, and enhance the environment.

[2] The NNSA is a separately organized agency within the DOE established by the *1999 National Nuclear Security Administration Act* [Title 32, of the *Defense Authorization Act* for Fiscal Year 2000 (Public Law 106-65)].

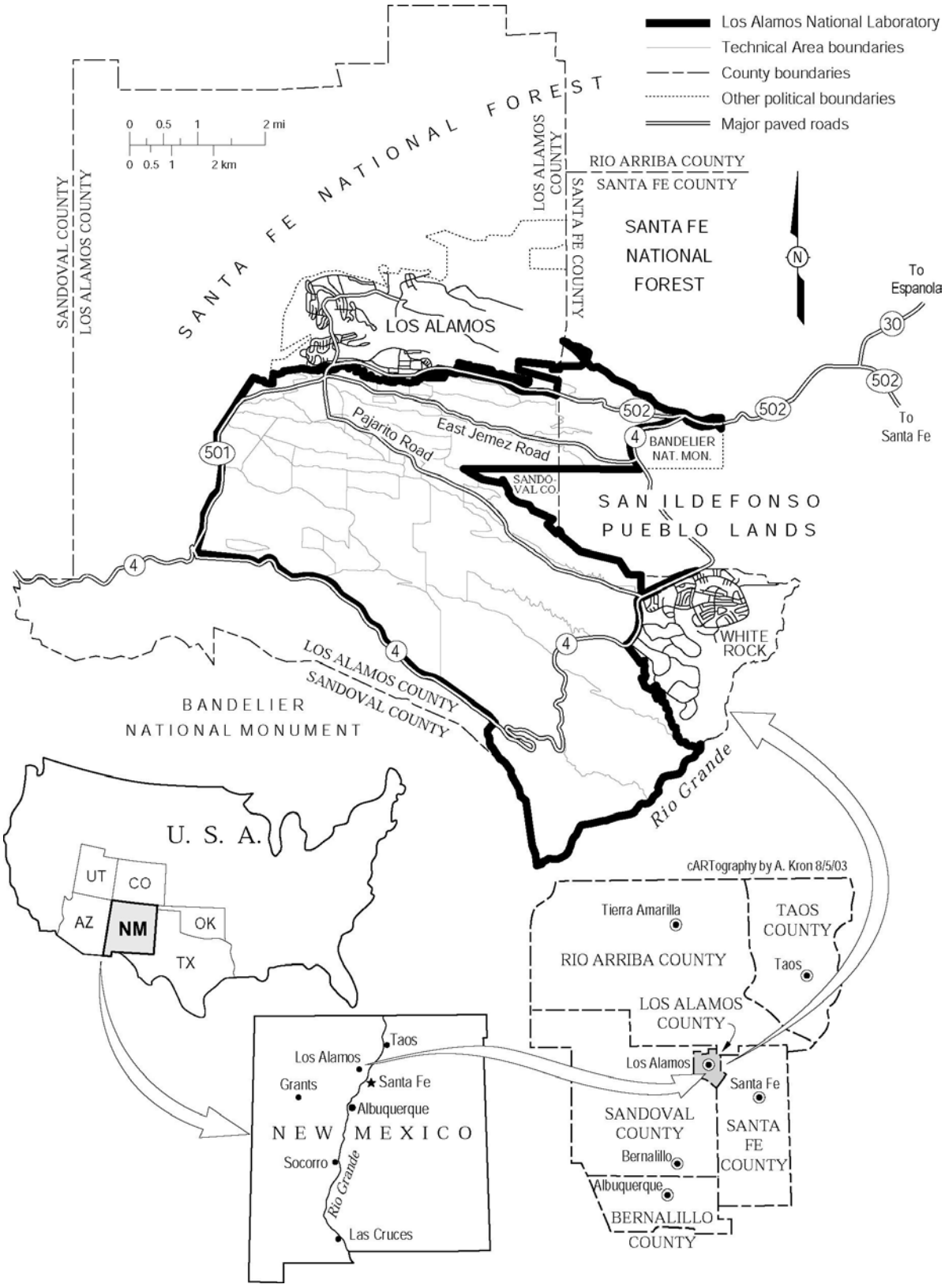


**Figure 1.** Location of Los Alamos National Laboratory.

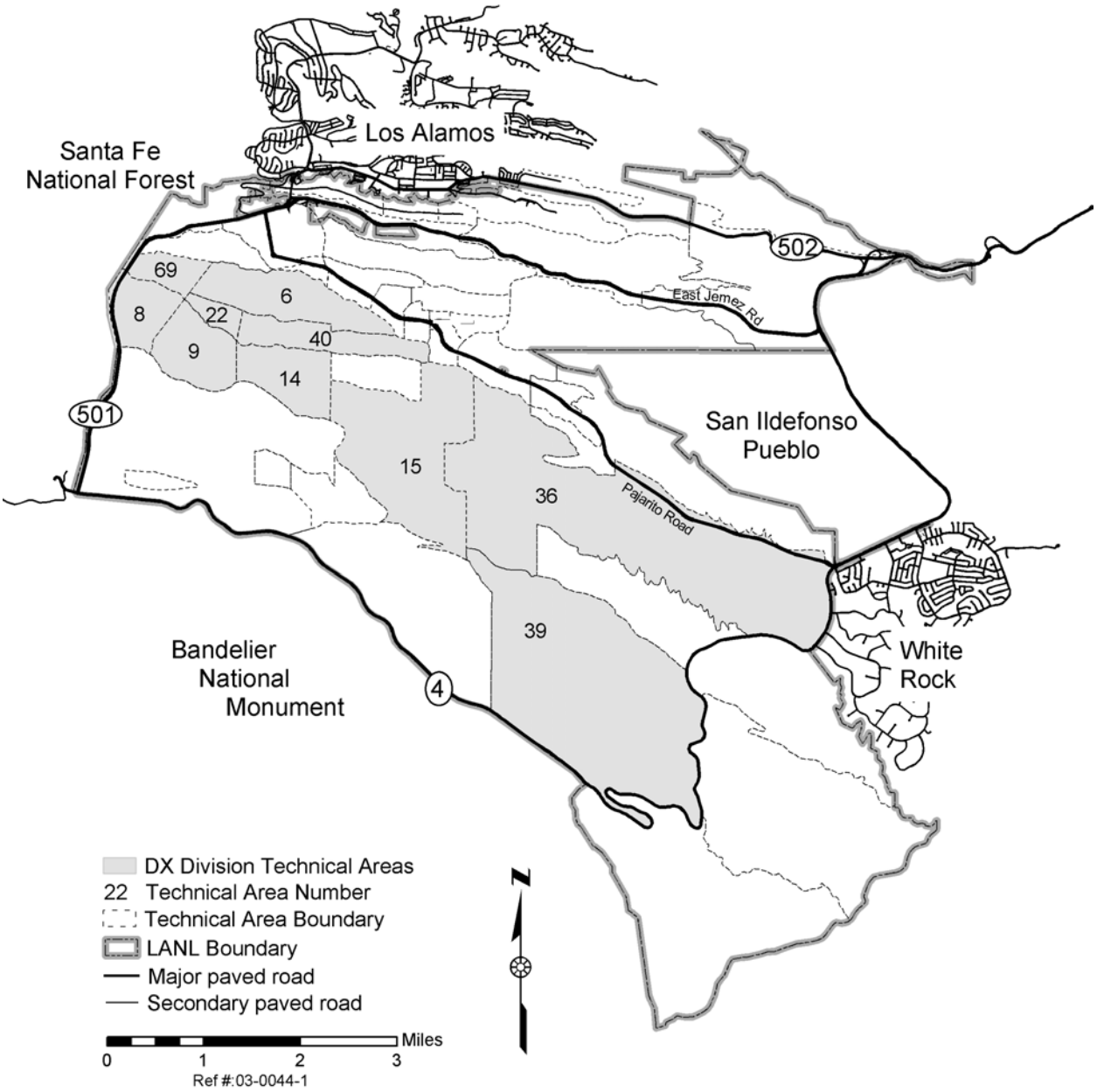


**Figure 2.** DX technical areas at LANL.

## 1.2 Background

The U.S. National Security Policy requires NNSA to maintain core intellectual and technical competencies in nuclear weapons and to maintain a safe, and reliable, national nuclear weapons stockpile. NNSA fulfills its national security nuclear weapons responsibilities through the Stockpile Stewardship Program, which involves activities performed at LANL. LANL is one of three national laboratories that support DOE's responsibilities for national security, energy resources, environmental quality, and science. NNSA's national security mission includes the

safety and reliability of the nuclear weapons in the stockpile; maintenance of the nuclear weapons stockpile; stemming the international spread of nuclear weapons materials and technologies; developing technical solutions to reduce the threat of weapons of mass destruction; and production of nuclear propulsion plants for the U.S. Navy. The energy resources mission of DOE includes research and development for energy efficiency, renewable energy, fossil energy, and nuclear energy. The DOE's environmental quality mission includes treatment, storage, and disposal of DOE wastes; cleanup of nuclear weapons sites; pollution prevention; storage and disposal of civilian radioactive waste; and development of technologies to reduce risks and reduce cleanup costs for DOE activities. DOE's science mission includes fundamental research in physics, materials science, chemistry, nuclear medicine, basic energy sciences, computational sciences, environmental sciences, and biological sciences and often contributes to the other three DOE missions. LANL provides support to each of these departmental missions, with a special focus on national security.

To carry out its Congressionally assigned mission requirements, NNSA must maintain a safe and reliable infrastructure at each of the national security laboratories. The 1999 Final *Site-Wide Environmental Impact Statement for Continued Operations of the Los Alamos National Laboratory* (SWEIS) (DOE 1999a) discusses each of the previously identified DOE missions in greater detail and analyzes four different levels of operations at LANL that support these missions. The SWEIS identified the various technical areas at LANL, their associated activities, and buildings. The SWEIS also identified emerging actions at LANL (see Section 1.6.3.1 of the SWEIS) and included a discussion of a variety of options for the renovation of infrastructure at LANL's TA-3 that could include the replacement of a number of aging structures either individually or as part of a multi-building effort. The SWEIS stated that more than half of LANL facilities are aging and are in poor, fair, or failing condition. Many of the buildings and structures at LANL were built after World War II ended in the mid-1940s. When the SWEIS was finalized in 1999, it was anticipated that one or more building replacements (offices and laboratories) would be needed to continue housing existing types of activities pursued at TA-3. Planning for renovations and replacements in TA-3 was still underway and the effects of these actions were not considered in the SWEIS. Proposals to replace aging structures at other technical areas at LANL were not sufficiently developed to be analyzed in the SWEIS. Soon thereafter, however, tighter budget allocations and newly identified possible solutions for saving overall costs once again raised the issue of replacing aging structures. Proposals to consolidate activities into grouped facilities at LANL, with an overall reduction in the size of facilities, have resulted from evaluations of the capabilities needed to meet the requirements of mission programs, the cost savings in long-term operating dollars, and the efficiency of operations that consolidation would bring.

The existing DX facilities at LANL were constructed before and during the Cold War Era when the mission of DOE's predecessor agency was to sustain aggressive system development, nuclear testing, and stockpile deployment. Today DX's primary function is nuclear stockpile stewardship, with certification responsibility for a substantial majority of the nation's active nuclear weapons stockpile. DX's stockpile stewardship activities currently involve facilities primarily located in buildings and structures at TA-6, TA-8, TA-9, TA-14, TA-15, TA-22, TA-36, TA-39, TA-40, and TA-69. Many of the buildings and structures in the technical areas that support weapons research and development and processing were built in the 1940s and 1950s (Photo 1). Most of these buildings (with the exception of the office buildings and buildings and

**Photo 1.** TA-9 Building 21, built in 1952.

structures with similar support functions, such as craft[3] shops and storage areas) and their operations are described in the SWEIS. NNSA has become aware of structural and systemic problems at DX facilities at LANL that make it difficult to meet the functional and safety requirements of the operations that these facilities house. The identified problems include the physical condition of the buildings and the reliability of the major building systems, namely, the electrical, mechanical, and plumbing systems. Not only are many of the buildings' systems required to meet demands that were unforeseen in the 1940s and 50s (such as today's needs for increased electric power and high-speed computer and communication systems), but system components are also failing because of normal stresses, strains, and general fatigue resulting from operating long beyond their individual design lives. With these component failures, it is becoming increasingly difficult to provide replacement parts for equipment that is no longer being manufactured for today's markets. The basic plumbing systems are deteriorating, frequently leak, and can no longer be reliably maintained (Photo 2). The heating, ventilation, and air conditioning (HVAC) systems do not meet current commercial standards for shops and office facilities. Several of the buildings do not have air conditioning, while others are cooled by multiple systems, including through-wall systems (window air conditioners) that have been installed over the years. These through-wall systems are very noisy and inefficient. In many instances, the equipment employs outdated technology and is expensive to maintain and operate. The electrical distribution system does not function reliably, contains many current code violations (few of which are subject to waivers), and does not include surge protection capabilities needed to protect modern office equipment, especially personal computers. The lighting systems fail to meet current standards for appropriate ergonomic illumination or energy use. Many modifications to the existing buildings are needed to comply with *Americans with Disabilities Act* requirements. Accommodating changes in levels of staff and operations that have occurred over the past 40-plus years is also difficult in the existing buildings.

[3] Crafts include carpentry, pipefitting, sheet-metal working, and similar activities.


**Photo 2.** Maintenance problems at DX facilities.

A recent study by DOE's National Renewable Energy Laboratory (NREL 1999) showed that it is possible to achieve energy cost savings of up to 63 percent when constructing office and laboratory buildings in a climate similar to Los Alamos. Additionally, DX operations are spread over approximately 22 $mi^2$ (57 $km^2$) and occupy more space in LANL buildings than is required for those operations, leading to a loss of efficiency and increased cost compared to consolidated activities. Operational, routine, and emergency maintenance costs for the DX buildings and structures are estimated to be several million dollars per year more than required by newer, more efficient buildings of similar sizes. Reduced operational and maintenance costs for consolidated activities, with appropriate square footage to support current mission activities, would result in additional cost savings.

After the May 2000 Cerro Grande Fire, NNSA instituted a wildfire hazard reduction program at LANL. As part of this program, LANL staff has expedited efforts to replace transportable structures with permanent constructed facilities and to remove facilities that house employees or critical missions support activities from forest interface areas at LANL. A number of site DX employees are housed in transportables (Photo 3) that are dispersed in remote locations, some of which are in forested or forest interface areas. This situation makes these facilities, which are less fire resistant than permanent structures, particularly vulnerable to fire damages, as they are difficult to defend in the event of fire.


**Photo 3.** Transportable at TA-69 (Building 2).

In addition to wildfire safety issues, there are several traffic safety problems at DX technical areas, particularly at the existing TA-69 access-control station (Photo 4, top left). Because the gate is not equipped to handle a large volume of vehicles and pedestrians, traffic congestion is frequently severe. Often traffic is backed up onto State Road (SR) 501. There have been a number of vehicle and pedestrian accidents at the location (Photo 4).

## 1.3 Statement of Purpose and Need for Agency Action

NNSA has assigned a continuing role to LANL in carrying out NNSA's national security mission. To enable LANL to continue this enduring responsibility requires that NNSA maintain the capabilities and capacities required in support of its national mission assignments at LANL. Several buildings and structures that house programmatic research and support functions essential to the overall LANL operations and nuclear weapons work performed for DOE and NNSA have many identified deficiencies associated with them. NNSA has also identified wildfire and traffic safety issues at DX facilities. NNSA needs to correct these problems so that the necessary programmatic, management, and support functions housed at LANL can continue to function with a high level of efficiency. Additionally, NNSA also needs to minimize energy and resource consumption and reduce the cost of maintaining operations.


**Photo 4.** Traffic congestion and accident at entrance gate.

## 1.4 Scope of This EA

A sliding-scale approach (DOE 1993) is the basis for the analysis of potential environmental and socioeconomic effects in this EA. That is, certain aspects of the Proposed Action have a greater potential for creating environmental effects than others; therefore, they are discussed in greater detail in this EA than those aspects of the action that have little potential for effect. For example, implementation of the Proposed Action would affect waste disposal resources in the LANL area. This EA, therefore, presents in-depth descriptive information on these resources to the fullest extent necessary for effects analysis. On the other hand, implementation of the Proposed Action would cause only a minor effect on socioeconomics at LANL. Thus, a minimal description of socioeconomic effects is presented.

When details about a Proposed Action are incomplete, as are a few for the Proposed Action evaluated in this EA (for example, the exact amount of waste generation), a bounding analysis is often used to assess potential effects. When this approach is used, reasonable maximum assumptions are made regarding potential emissions, effluents, waste streams, and project activities (see Chapters 2 and 3 of this EA). Such an analysis usually overestimates potential effects. In addition, any proposed future action(s) that exceeds the assumptions (the bounds of this effects analysis) would not be allowed until an additional NEPA review could be performed. A decision to proceed or not with the action(s) would then be made.

## 1.5 Public Involvement

NNSA provided written notification of this NEPA review on June 6, 2002, to the State of New Mexico, the four Accord Pueblos (San Ildefonso, Santa Clara, Jemez, and Cochiti), Acoma Pueblo, the Mescalero Apache Tribe, and to over 30 stakeholders in the area. In addition, upon release of this draft EA, NNSA will allow for a 21-day review period. Where appropriate and to the extent practicable, concerns and comments will be considered in the final EA.